FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST-7367
FACILITY NAME: WHATCOM COUNTY WATER DISTRICT #13

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. ST-7367. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the State include procedures for issuing permits (Chapter 173-216 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Northwest Office of the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Whatcom County Water District #13
Facility Name and Address	Whatcom County Water District #13 532 Sprague Valley Drive Sumas, WA 98295
Type of Treatment System	Aerated Lagoon with discharge to ground
Discharge Location	Latitude: 48° 55' 44" N Longitude: 122° 09' 05" W
Legal Description of Application Area	A portion of the Southwest ¼ Section 22, Township of 40 North, Range 5 East of W.M.
Contact at Facility	Name: Don Van Iderstine Telephone #: (360) 599-1801
Responsible Official	Name: Cameron Sommerville Title: Commissioner Address: 532 Sprague Valley Drive, Sumas, WA 98295 Telephone #: (360) 599-1801 FAX #:

BACKGROUND INFORMATION

DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

HISTORY

The facility was constructed in 1977 to serve the Peaceful Valley development, located near the town of Kendall, Washington. The original plans for the development included 1,400 lots and a design population of 2,100. This design included sufficient land at the treatment plant site for expansion to serve neighboring Paradise Lakes Country Club and Camper's Paradise. During the first ten years after construction, few homes were actually built and flow to the treatment facility was low enough that discharge was negligible. No discharge permit was issued for the facility until January 25, 2001. In the past several years, more homes have been developed in the plat and influent flow has increased. The facility currently serves a population of 714 residents. Water District #13 applied for its original permit to discharge on April 27, 2000. The Department accepted the permit application on June 2, 2000.

COLLECTION SYSTEM STATUS

According to the Permittee's *Operation and Maintenance Manual* written in 1977, the collection system piping that was originally installed consisted of the following: a total of 6,814 feet of interceptor pipe ranging in size from 8 to 12 inches in diameter. There were 13,077 feet of 8-inch diameter collector pipe installed. All piping was PVC. Together the interceptor and collector piping gravity drains to the collection systems one pump station and then is pumped through 1,800 feet of 4-inch force main piping to the treatment systems comminutor where solids are ground into approximately ¼-inch pieces and introduced into the treatment plant. The wet wells were designed to hold at least five minutes of pump operation which was rated at 75 gallons per minute at 35 feet of head. Inflow and infiltration (I&I) to the system is unknown.

TREATMENT PROCESSES

Influent passes through an influent pump station containing two pumps, one pump serving as back-up. It is then pumped into the grit chamber, a concrete channel approximately six feet long that allows grit and sand to fall out of the flow. Flow then passes through the comminutor a grinder capable of grinding solids into 1/4 to 3/8-inch size. Influent is then directed into the first of two aerated lagoons that operate in series, followed by one unaerated facultative lagoon, before being pumped to a 1.4-acre drainfield. Original plant design called for a minimum six-day detention time divided as four days in the two aerated lagoons followed by two days detention in the unaerated, polishing lagoon. The discharge is not currently being chlorinated. The treatment plant is considered a Class I facility under WAC 173-230-140. Presently one operator with a Class I certification is in charge of the facility. The system currently accepts only domestic waste water. The facility is staffed 8 hours a day, three days a week with the operator, who lives in the immediate area being on-call for emergencies when not physically at the plant. The land where the drainfield is located is not presently owned by the water district but is encumbered with an easement to ensure that it is not built upon.

DISTRIBUTION SYSTEM (DRAINFIELD)

Whatcom County Water District #13 lies in coarse glacial outwash sediments of the Columbia Valley. The peaceful Valley Comprehensive Sewerage Plan states that, "The valley floor is underlaid with approximately 150 feet of permeable gravels. Depth to the ground water table varies from 10 to 40 feet. Mean annual ground water flow through the Columbia Valley is estimated to be 20,900 acre-feet. Almost all of this found (sic) water is discharged through springs within the project [Water District #13] boundaries and then flows through Paradise and Sprague Lakes and Kendall Creek south to the Nooksack River. The flow in Kendall Creek is almost entirely derived from Columbia Valley ground water." (Whatcom County Water District #13, 1975).

Test pits dug at the time of the drainfield construction in 1977 showed gravel at three to six feet deep. Ground water flow direction in the vicinity of the District's drainfield is estimated to be perennially toward the south-southeast.

In 1994 the District installed three monitoring wells (wells A, B, and C) located south and southeast of the 1.4-acre drainfield. These wells were sampled semi-annually. Ground water quality sampling results from well A, the well most directly down gradient were used as an indication of adequacy of treatment performance at the District's wastewater treatment facility and drainfield system. A District water supply well (well #1) located approximately 2,000 feet north of the District's drainfield is upgradient of the drainfield and does not appear to be influenced by the drainfield. This is the nearest upgradient well to the drainfield and monitoring wells, though it is screened at a lower depth and cannot serve as a representative background well for comparison to the drainfield ground water monitoring. Since present wells and sampling data cannot adequately serve a complete analysis of treatment adequacy to protect potential drinking water in the form of ground water, the permit requires a groundwater monitoring study during the term of the permit. This study will encompass those areas outlined in the most recent edition of *Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems*, Ecology 1993, and the most recent edition of *Implementation Guidance for the Ground Water Quality Standards*, Ecology, 1996.

Treated effluent was characterized for the following parameters prior to land application:

Parameter	Min. Concentration mg/L	Average Concentration mg/L	Max. Concentration mg/L	Number of Analyses	Detection Limit
BOD (5-day)	13 mg/L	32.24 mg/L	84 mg/L	52	2 mg/L
Total Suspended Solids	10 mg/L	28.33 mg/L	59 mg/L	52	1 mg/L
Ammonia-N	4.4 µg/L	17.78 µg/L	33.4 µg/L	52	20 µg/L
pH	6.1	7.15	8.0	262	0.1 units
Nitrate-Nitrite	<0.5 mg/L	8.05 mg/L	19.0 mg/L	52	0.5 mg/L
Total Kjeldahl N	5.8 µg/L	23.04 µg/L	37.9 µg/L	52	20 µg/L

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the first, second, and third lagoons, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum, and screenings are drained and disposed of as solid waste at the local landfill. Solids from the three lagoons are removed and trucked to the City of Bellingham's wastewater facility at Post Point where they are incinerated. A sludge management plan as such is not included in the original Operations and Maintenance (O&M) Manual though a paragraph on the last page of chapter one describes how sludges will be removed and possible disposal. The O&M manual shall be updated to reflect present solids management practices, facility staffing, and any other current operational procedures that differ from the original O&M manual.

GROUND WATER

A groundwater or hydrogeologic characterization was performed in 1974 and 1975 and the report was submitted by the Permittee in 1975 with its Comprehensive Sewer Plan. Groundwater is the primary source of drinking water in Peaceful Valley. Since the original characterization many advances have been made in hydrogeologic science and technology. To analyze more fully any impacts to groundwater this permit will require the Permittee to have a hydrogeologic study completed during this permits five-year term. This study shall be conducted and written following the guidelines specified in the Departments document entitled, "Implementation Guidance for the Groundwater Quality Standards."

PERMIT STATUS

The previous permit for this facility was issued on January 25, 2001.

An application for permit renewal was submitted to the Department on August 20, 2004 and accepted by the Department on September 21, 2004.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received inspections conducted on July 7, 2003 and May 17, 2004. Copies of the inspection reports were sent to the facility for their records. The July 7, 2003 inspection was due to BOD violations noted on the facility's DMR's. During the inspection it was noted that recent temperature variances of 20 to 30 degrees had caused sludges in the lagoons to turn over and large clots of sludge could be seen rising to the surface and floating. A compliance inspection with sampling was conducted on May 17, 2004. During the inspection on May 17, 2004, only two concerns were noted. The composite samplers taking influent and effluent samples need to be kept at 4º C, and biosolids skimmed from the concrete contact chamber should not be burned but rather reintroduced to the treatment facility at either the headworks or one of the lagoons.

During the history of the previous permit, the Permittee encountered problems with compliance and reported these problems in its Discharge Monitoring Reports (DMRs) submitted to the Department. The majority of these problems were exceeding its limits for BOD. BOD, or biological oxygen demand, can be defined as the amount of oxygen required by aerobic microorganisms to decompose the organic matter in a sample of water. It is used as a measure of the degree of water pollution. The District had 4 warnings for exceeding its maximum limit for

total pounds per day of BOD and 9 occurrences of exceeding its average monthly or average weekly limits for BOD resulting in violations. Water District #13 experienced 4 total suspended solids violations during the length of this permit. These violations are the result of sludge turnover in one or more of the facility's lagoons as noted above during the June 7, 2003, inspection. Turnover is the result of ambient temperatures in both the air and water warm enough to cause a thermal turnover, or inversion within the non-aerated lagoon. Because of this, sludges and solids that normally rest on the bottom of the lagoon warm enough to rise to the surface. Solids and sludges normally blanketing the bottom of the lagoon rise and are stirred up creating suspended solids that do not quickly settle. These suspended solids create turbidity and remain suspended in the effluent as it is sampled before flowing to the drainfield.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application and in Discharge Monitoring Reports. The proposed wastewater discharge prior to infiltration or land application is characterized for the following parameters:

Table 1: Wastewater Characterization

Parameter	Concentration
BOD (5-day) mg/L	32.24 average
TSS mg/L	28.33 average
pH S.U.	6.1 to 8.0
Conductivity	NA
Nitrate + Nitrate-N mg/L	8.05 mg/L
Ammonia mg/L	NA
Total Kjeldahl N	23.04

SEPA COMPLIANCE

SEPA is not currently an issue with this facility.

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available and reasonable treatment (AKART) and not pollute the waters of the state. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Water Reclamation and Reuse Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

The permit also includes limitations on the quantity and quality of the wastewater applied to the drainfield that have been determined to protect the quality of the ground water. The approved engineering report includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

EFFLUENT LIMITATIONS		
Parameter	**Average Monthly**	**Maximum Daily**
BOD_5	45 mg/L or 45 lbs/day	65 mg/L or 65 lbs/day
TSS	45 mg/L or 45 lbs/day	65 mg/L or 65 lbs/day
pH	Shall not be outside the range of 6.5 – 8.5 standard units	
Total Nitrogen	Report	Report
* The average effluent limitation is defined as the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.		
* The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day.		
Sum of organic nitrogen, ammonia, nitrite and nitrate.		

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the ground water quality standards. Drinking water is the beneficial use generally requiring the highest quality of ground water and is the standard used in this permit. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

Table 2: Ground Water Quality Criteria

Total Coliform Bacteria	1 Colony / 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Nitrate	10 mg/L
pH	6.5 to 8.5 standard units
Manganese	0.05 mg/L
Total Iron	0.3 mg/L
Toxics	No toxics in toxic amounts

Pollutant concentrations in the form of nitrogen in the proposed discharge may be exceeding ground water quality criteria with technology-based controls which the Department has determined to be AKART. The Department has determined that it does not have enough useable data at this time to determine if an exceedence is occurring or to determine a limit based on ground water criteria. The Department expects to receive enough useable data from the required groundwater characterization to perform analysis and determine whether a limit is needed for nitrogen. Presently the facility treatment process is a properly functioning lagoon system to treat waste water; however, the Department believes that an engineering report exploring process alterations or further treatment options to enable the facility to denitrify and nitrify may enable the facility to achieve lower nitrogen in its effluent. The facility has not been given a water quality limit for nitrogen at this time, though with information from the required groundwater characterization mentioned above, the Department may modify the permit in the future.

Valid upgradient background data were not available for listed pollutants. The Permittee is required in Section S.8 of the permit to perform a groundwater characterization. This information may result in a permit modification or limits in the next renewal.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

INFLUENT AND EFFLUENT MONITORING

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. Ground water standards must be met at the edge of the facility's drainfield. The facility was designed to treat final effluent in a designed drainfield just as domestic septic systems do. Domestic septic systems are designed and built with piping in their drainfield within a soil depth known as the vadose zone. The vadose zone is that part of the soil profile between the surface, extending down approximately six inches to one foot, and the surface of the ground water or saturated zone, that is able to exchange water and water vapor through soil pores. The vadose zone is an aerated portion of the soil profile and able to maintain a bacterial ecology. It is this bacterial ecology that is largely responsible for eliminating bacteria from waste water effluent before it reaches ground water. The facility has been able to meet the pH values of 6.5 and 8.5 in the state's ground water quality standards so they have been given as limits in this permit.

Monitoring for nitrate is being required to further characterize the effluent. This pollutant could have a significant impact on the quality of the ground water.

SOIL MONITORING

Soil monitoring is not required at the time this permit is being written, though may be required in the future by way of permit modification.

VADOSE ZONE MONITORING

Vadose zone monitoring is not required at the time this permit is being written, though may be required in the future by way of permit modification.

GROUND WATER MONITORING

The monitoring of ground water at the site is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. The Department has determined that there is not enough information at this time to determine if this discharge has a potential to pollute the ground water. Therefore, the Permittee is required to evaluate the impacts of the facility's effluent on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

FACILITY LOADING

The design criteria for this treatment facility are taken from the (1975) comprehensive plan and the facility's most recent permit application prepared by Rheichart and Ebey and are as follows:

Monthly average flow (max. month):	.12 mgd
Monthly average dry weather flow:	046 mgd [1]
Monthly average wet weather flow:	.053 mgd [2]
Instantaneous peak flow:	0.5 mgd
BOD influent loading:	45 lbs/day
TSS influent loading:	45 lbs/day

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant (WAC 173-216-110[4]). The Permittee is required to submit an engineering report when the plant reaches 85% of its flow or loading capacity. For significant new discharges, the permit requires a new application and an engineering report (WAC 173-216-110[5]).

OPERATIONS AND MAINTENANCE

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

GROUND WATER QUALITY EVALUATION (HYDROGEOLOGIC STUDY)

In accordance with WAC 173-200-080, the permit requires the Permittee to prepare and submit a hydrogeologic study for Departmental approval. The hydrogeologic study will be based on soil and hydrogeologic characteristics and be capable of assessing impacts on ground water. The guidelines given in *"Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems,"* Ecology, 1993, are appropriate for municipal land application systems.

[1] Represents an arithmetic average taken from discharge monitoring reports over the five-year permit term.
[2] Represents an arithmetic average taken from discharge monitoring reports over the five-year permit term.

RESIDUAL SOLIDS HANDLING

To prevent water pollution, the Permittee is required in permit Condition S6 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503 and by Ecology under Chapter 70.95J RCW and Chapter 173-208 WAC. The disposal of other solid waste is under the jurisdiction of the local health district.

Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information will by used by Ecology to develop or update local limits and is also required under 40 CFR 503.

PRETREATMENT

WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

Federal pretreatment requirements in 40 CFR 403 and Sections 307(b) and 308 of the Clean Water Act apply to this facility. Therefore notification to the Department is required when pretreatment prohibitions are violated and when new sources of commercial or industrial wastewater discharge are added to its system.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility. Condition G6 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes, or regulations. Condition G8 requires application for permit renewal sixty (60) days prior to the expiration of the permit. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the state of Washington. The Department proposes that the permit be issued for five (5) years.

REFERENCES FOR TEXT AND APPENDICES

Faulkner, S.P., Patrick Jr., W.H., Gambrell, R.P., May-June, 1989. Field Techniques for Measuring Wetland Soil Parameters, Soil Science Society of America Journal, Vol. 53, No.3.

Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.

Washington State Department of Ecology and Department of Health, 1997. Water Reclamation and Reuse Standards, Ecology Publication # 97-23. 73 pp.

Washington State Department of Ecology.

Laws and Regulations (http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information
(http://www.ecy.wa.gov/programs/wq/wastewater/index.html)

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

APPENDICES

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public Notice of Application (PNOA) was published on October 13 and 20, 2004, in the *Bellingham Herald* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department published a Public Notice of Draft (PNOD) on May 26, 2005, in the *Bellingham Herald* to inform the public that a draft permit and fact sheet were available for review. Interested persons were invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents were available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments were mailed to:

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30)-day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 676-2198, or by writing to the address listed above.

This permit was written by Mark Henderson.

APPENDIX B—GLOSSARY

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in waste water. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect waste water.

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous Monitoring--Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the waste water. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic waste water. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)--A calculated value five times the MDL (method detection level).

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy,

crops or soils, and have 5, 3, or 1 year(s), respectively, of professional experience working in the area of agronomy, crops, or soils.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Vadose Zone--also known as the unsaturated zone, is that portion of soil between the soil surface and the top of the water table aquifer.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Revised 3/00	Ambient Concentration (Geometric Mean)	Water Quality Criteria for Protection of Human Health	Max Concentration at edge of Chronic Mixing Zone	LIMIT REQ'D ?	Expected Number of Compliance Samples per Month	AVERAGE MONTHLY EFFLUENT LIMIT	MAXIMUM DAILY EFFLUENT LIMIT	Estimated Percentile at 95% Confidence		Max Effluent Conc. Measured	Coeff Variation		# of samples from which # in col. K was taken	Multiplier	Calculated 50th Percentile Effluent Conc. (When n>10)	Dilution Factor
Parameter	***ug/L***	***ug/L***	***ug/L***			***ug/L***	***ug/L***		***Pn***	***ug/L***	***CV***	**S**	***n***			
Nitrate as N	840.0000	10000	3100.00	**NO**	**1.00**	**NONE**	**NONE**	0.50	0.93	43750	0.60	0.6	42	0.44		

APPENDIX D--RESPONSE TO COMMENTS

No comments were received on the draft permit.